BMP #53 - Level Spreader

Targeted Pollutants

N/A Sediment

N/A Phosphorus

◯ Trace metals

◯ Bacteria

◯ Petroleum hydrocarbons

Physical Limits

Drainage area 5 ac

Max slope 1%

Min bedrock depth N/A

Min water table N/A

SCS soil type ABCD

Freeze/Thaw fair

Drainage/Flood control no

DESCRIPTION

A level spreader receives concentrated flow from channels, outlet structures, or other conveyance structures, and converts them to sheet flow. Although a level spreader by itself is not considered a pollutant reduction device, it improves the efficiency of other facilities, such as vegetated swales, filter strips, or infiltration devices, which are dependent on sheet flow to operate properly.

APPLICATION AND LIMITATIONS

Level spreaders are used in wide, level areas where concentrated runoff occurs. The site should be undisturbed soil stabilized by vegetation. Disturbed soil is subject to more erosion and may settle. If the spreader is not absolutely level, flows will concentrate at the low point and may make cause more problems than no level spreader. Flows to the spreader should be relatively free of sediment or the spreader will be quickly overwhelmed by sediment and lose its effectiveness.

Design Parameters

The spreader must be constructed absolutely level. Height of the spreader is based on depth of design flow, allowing for sediment and debris deposition. The length of the spreader is based on the 10-year design flow for the site, as follows:

Drainage Area, acres (hectares) Minimum Spreader Length, ft (meters)

1 (0.4) 10 (3.1)

2 (0.8) 10 (3.1)

3 (1.2) 15 (4.6)

4 (1.6) 18 (5.5)

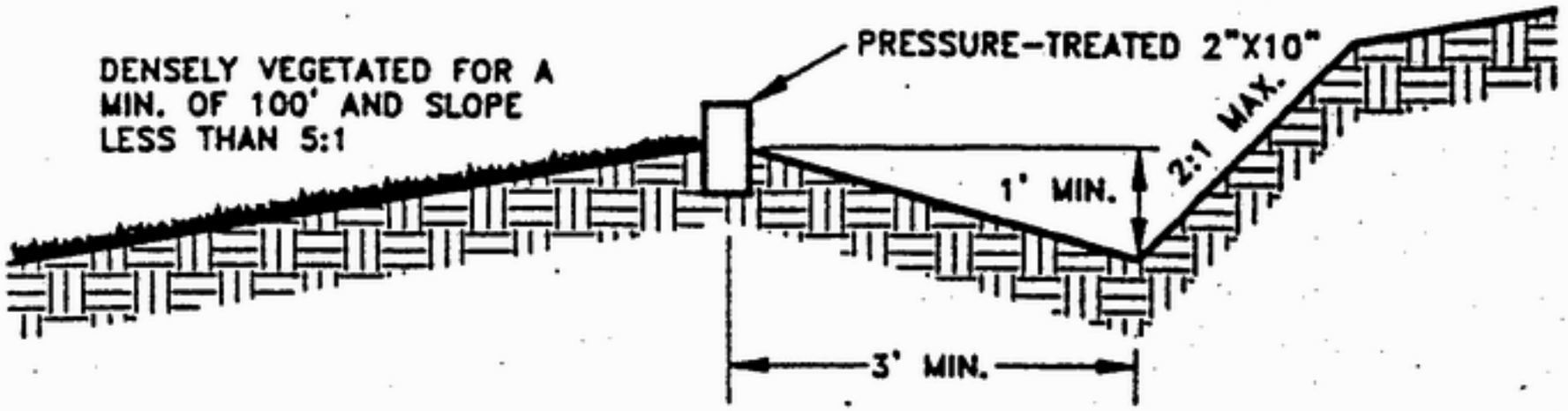
5 (2.0) 20 (6.1)

The slope leading to the level spreader should be less than 1% for at least 20 feet (6.1 m) immediately upstream in order to keep velocities less than 2 fps at the spreader during the 10-year storm event. Slope of the outlet from the spreader should be 6% or less.

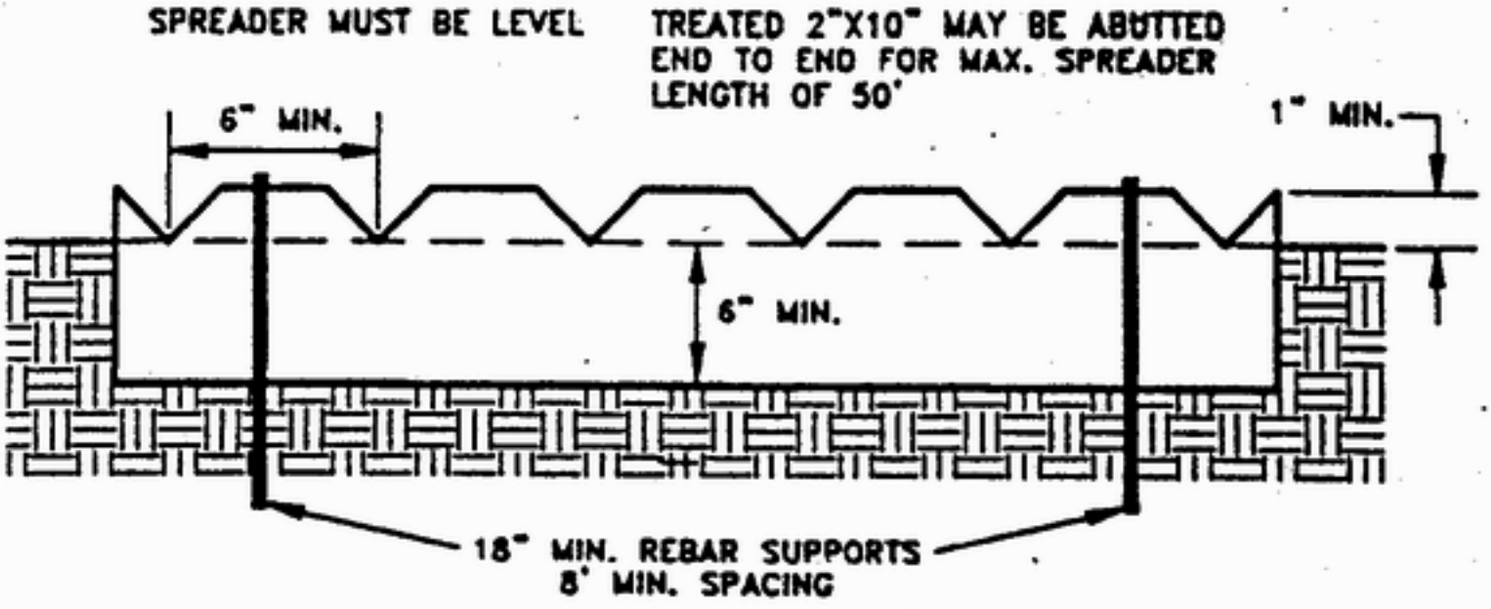
Maintenance

The level spreader must be regularly inspected, including after large rainfall events. Inspection should note and repair any erosion and low spots in spreader.

Sediment should be removed from behind spreader.



CROSS SECTION



ALTERNATIVELY, 6" DIA. CMP MAY BE USED AS A SPREADER.
THE PIPE SHALL BE BURIED SO THAT ONLY 1" EXTENDS ABOVE GROUND.

DETAIL OF SPREADER

Source: King County
Surface Water Design Manual